Office Action Summary	Application No. 09/974,759	Applicant(s) RANK, STEPHEN D.	
	Examiner PAUL A BELL	Art Unit 2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-10,12-20 and 22-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-10,12-20 and 22-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *24*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-5, 8-10, 12-14, 17-20, 22-24, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (6,285,351) in view of Thorner et al. (6,422,941).

With regard to claim 2, Chang et al. teaches a method (SEE Chang et al. title "DESIGNING FORCE SENSATIONS FOR COMPUTER APPLICATIONS INCLUDING SOUNDS" abstract and figure 1), comprising: storing a portion of sound data in a memory buffer of a computer (SEE Chang et al. figure 1, shows a "HOST COMPUTER SYSTEM" that has an audio output for games, and column 3, lines 15-23, see "list" of sounds, wherein it is inherent that the computer stores sound data in a memory), analyzing the portion of sound data using heuristics to identify at least one sound feature from the portion of sound data (SEE Chang et al. column 3, lines 15-22 and figure 8, item 512, column 15, lines 65-67), and executing at least one haptic effect based on the at least one sound feature the haptic effect being associated with the portion of sound data (SEE Chang et al. column 2, lines 29-67, column 3, lines 1-40 and column 15, lines 1-39).

Chang et al. does not illustrate, "the analyzing including identifying at least one frequency component of a sound feature, the at least one frequency component being from a first frequency range", he instead just analyzes a portion of the sound data from a list to predetermine which sound data goes with a certain force sensation in a game.

However Thorner et al. shows a "Universal Tactile Feedback System for Computer Video Games and Simulations" which teaches , "the analyzing including identifying at least one frequency component of a sound feature, the at least one frequency component being from a first frequency range" (SEE Thorner et al. figure 1, items 100, 102, 103, 112, figure 3, items 310, 330, figure 4, items 430, 440, 450, 340, figure 11, items 1110, 1120, and 1130, column 2, lines 52-65), column 8, lines 57-66, column 9, lines 53-67, column 11, lines 17-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Chang et al. apparatus to have the above features as taught by Thorner et al. because Chang et al. indirectly suggest it in column 15, line 32-39, where he states; "In alternate embodiments, <u>different methods can be used to assign sounds</u>. For example, a sound might be assigned directly to a force sensation (or vice-versa), ...Whenever the force sensation is output, the associated sound is also output." This vice-versa language is clearly suggestive of the feature whenever the sound is output, the associated force sensation is also output. Since Chang et al. lacks the details as to how to automatically recognize a specific sound from a game as taught by Thorner et al. Chang et al. would have been motivated to use the well known Thorner et al. method of analyzing the frequency of the sound. The modifications

provided by Thorner et. al. would give the Chang et al. apparatus more utility because Thorner et al. provides a Host independent section that facilitates the playing of old games that had sound but no force feedback whereby because of its ability to recognize the game sounds it enhances the game with force feedback.

With regard to claim 3 the combination of Chang et al. and Thorner et al. teaches the method of claim 2, wherein at least one haptic effect executed is associated with the at least one frequency component (SEE Thorner et al. figure 12).

With regard to claim 10 the combination of Chang et al. and Thorner et al. teaches the method of claim 2, wherein the at least one haptic effect was previously mapped to the at least one sound feature (SEE Chang et al. column 15, lines 20-24 and 32-38).

With regard to claim 4 the combination of Chang et al. and Thorner et al. was shown in claim 1 above to read on most of the limitations of claim 4 in addition the combination of Chang et al. and Thorner et al. teaches ," analyzing including separating the portion of sound data into a plurality of frequency components associated with a plurality of frequency ranges by applying a plurality of filters to the portion of sound data (SEE Thorner et al. figure 4, item 430 "BASS AUDIO FILTER", item 440 "MIDRANGE AUDIO FILTER" 450 "TREBBLE AUDIO FILTER"), and identifying a sound feature associated with at least one frequency component from the plurality of frequency components (SEE Thorner et al. figure 4, item 340 and figure 12 "BASS AUDIO ANALYSIS").

With regard to claim 5 the combination of Chang et al. and Thorner et al. teaches the method of claim 4, the plurality of filters having at least: a low-pass filter; and a high-pass filter (see Thorner et al. figure 4, item s 430 and 450).

With regard to claim 8 the combination of Chang et al. and Thorner et al. teaches the method of claim 4, wherein the at least one frequency component is each associated with a haptic effect related to the frequency range associated with the at least one frequency component (SEE Thorner et al. figure 12).

With regard to claim 9 the combination of Chang et al. and Thorner et al. teaches the method of claim 4, wherein the at least one frequency component is each uniquely associated with a periodic haptic effect having a frequency corresponding to the plurality of frequency ranges associated with the at least one frequency component (SEE Thorner et al. figure 11 and also SEE Chang et al. lines 15-22 "periodics").

With regard to claim 12 the combination of Chang et al. and Thorner et al. was shown in claims 1 and 4 above to read on most of the limitations of claim 12 in addition the combination of Chang et al. and Thorner et al. teaches the sound feature and haptic effect are characterized as being high-level (this recitation as to the relative level of importance of a sound or haptic effect such as being high is best directed towards an obvious intended use of the combination of Chang et al. and Thorner et al. because it is obvious that there would be a level of importance assigned to sounds in order for the program to know what to do when it hears two or more sounds at the same time).

With regard to claim 13 the combination of Chang et al. and Thorner et al. teaches the method of claim 12, wherein the at least one high level haptic effect is associated with the at least one frequency component (SEE Thorner et al. figure 12).

With regard to claim 19 the combination of Chang et al. and Thorner et al. teaches the method of claim 12, wherein the least one high-level haptic effect is executed as a haptic sensation output by a haptic feedback device (SEE Chang et al. column 15, lines 32-38 and also SEE Thorner et al. figure 1, item 120).

With regard to claim 20 the combination of Chang et al. and Thorner et al. teaches the method of claim 12 wherein the at least one high-level haptic effect is stored in memory of the computer as a created haptic effect (SEE Chang et al. figure 8, items 510 and 511).

With regard to claim 14 the combination of Chang et al. and Thorner et al. was shown in claims 1, 4, and 12 above to read on most of the limitations of claim 14, in addition the combination of Chang et al. and Thorner et al. teaches, "the analyzing including separating the portion of sound data into a plurality of frequency components associated with a plurality of frequency ranges by applying a plurality of filters to the portion of sound data(SEE Thorner et al. figure 4, item 430 "BASS AUDIO FILTER", item 440 "MIDRANGE AUDIO FILTER" 450 "TREBBLE AUDIO FILTER"), and identifying a sound feature associated with at least one frequency component from the plurality of frequency components (SEE Thorner et al. figure 4, item 340 and figure 12 "BASS AUDIO ANALYSIS").

With regard to claim 17 the combination of Chang et al. and Thorner et al. teaches the method of claim 14, wherein the at least one frequency component is each associated with a haptic effect related to the frequency range associated with the plurality of frequency components (SEE Thorner et al. figure 12).

With regard to claim 18 the combination of Chang et al. and Thorner et al. teaches the method of claim 14, wherein the at least one frequency component is each uniquely associated with a periodic haptic effect having a frequency corresponding to the plurality of frequency ranges associated with the at least one frequency component (SEE Thorner et al. figure 11 and also SEE Chang et al. lines 15-22 "periodics").

With regard to claim 22 the combination of Chang et al. and Thorner et al. was shown in claims 1, 4, 12 and 14 above to read on most of the limitations of claim 22, in addition the combination of Chang et al. and Thorner et al. teaches, teaches a computer readable medium having code stored thereon (SEE Thorner et al. figure 2, item 102 and also figure 3, items 342 and 344),

With regard to claim 23 the combination of Chang et al. and Thorner et al. teaches the computer readable medium of claim 22, wherein at least one haptic effect is associated with the at least one frequency component (SEE Thorner et al. figure 12).

With regard to claim 27 the combination of Chang et al. Thorner et al. teaches the computer readable medium of claim 22 wherein the at least one haptic effect was previously mapped to the at least one sound feature (SEE Chang et al. column 15, lines 20-24 and 32-38).

With regard to claim 24 the combination of Chang et al. and Thorner et al. was shown in claims 1, 4, 12, 14 and 22 above to read on most of the limitations of claim 24, in addition the combination of Chang et al. and Thorner et al. teaches, the code to analyze including code to separate the portion of sound data into a plurality of frequency components associated with a plurality of frequency ranges by applying a plurality of filters to the portion of sound data (SEE Thorner et al. figure 4, item 430 "BASS AUDIO FILTER", item 440 "MIDRANGE AUDIO FILTER" 450 "TREBBLE AUDIO FILTER"), and code to identify a sound feature associated with at least one frequency component from the plurality of frequency components (SEE Thorner et al. figure 4, item 340 and figure 12 "BASS AUDIO ANALYSIS").

With regard to claim 26 the combination of Chang et al. and Thorner et al. teaches the computer readable medium of claim 24, wherein the code to analyze is operative to associate each frequency component from the plurality of frequency components with a haptic effect (SEE Thorner et al. figure item 12).

With regard to claim 28 the combination of Chang et al. and Thorner et al. was shown in claims 1, 4, 12, 14 and 22 above to read on most of the limitations of claim 24, in addition the combination of Chang et al. and Thorner et al. teaches, an apparatus, comprising: the means for analyzing being configured to identify at least one frequency component of a sound feature, the at least one frequency component being from a first frequency range ((SEE Thorner et al. figure 1, items 100, 102, 103, 112, figure 3, items 310, 330, figure 4, items 430, 440, 450, 340, figure 11, items 1110,

1120, and 1130, column 2, lines 52-65), column 8, lines 57-66, column 9, lines 53-67, column 11, lines 17-40).

3. Claims 6, 7, 15, 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Chang et al. and Thorner et al. as applied to claims 4, 14, and 24 above, and further in view of Fineberg (5,842,163).

With regard to claims 6, 7, 15, 16 and 25 the combination of Chang et al. and Thorner et al. does not illustrate, "the analyzing including: separating the portion of sound data into a plurality of frequency components associated with a plurality of frequency ranges using a fast Fourier transform (FFT), wherein a number of outputs from the fast Fourier transform are grouped to provide sound features associated with each frequency range from the plurality of frequency ranges". Thorner et al. instead performs separating the portion of sound data into a plurality of frequency components associated with a plurality of frequency ranges using a treble, midrange and bass audio filters. Note in column 8, lines 53-56 Thorner et al. states "This section serves to filter and separate the audio signal into one or more filtered audio signals that are more amenable to manipulation by the micro controller 320.

and then states in column 8, lines 57-64; "The analog audio signals leaving pre-processing section 310 are then sampled by analog-to-digital converters (ADCs) 330 to produce digital signals that are processed and analyzed by the processor 340 to generate the control signals for the tactile sensation generators. The processing of the audio signals are generally performed under the control of the micro controller 320 using the appropriate software application residing in the ROM 344."

Therefore there is a clear suggestion to use an "appropriate software application" to perform the processing of the sound data, but there was little detail given therefore it is essential we use a processing method well known in the art for proper implementation of the combination of Chang et al. and Thorner et al. It is obvious that the well known text book mathematical process of using a fast Fourier transform (FFT) to convert the input sound time function into a frequency (power) spectrum would have been used.

Fineberg teaches "method for recognizing a sampled sound signal in noise" (title), where "find a minimum and maximum feature value for each frequency band" (figure 2, item 220) and "determine power spectrum values for each pre-emphasized sampled sound signal" (figure 3) and see figure 4 "a representation of a power spectrum of a sampled sound signal with frequency filters imposed thereon" and further Fineberg states in column 3, lines 34-54;

"The pre-emphasized sound signal samples for each analysis frame are band pass filtered by a series of filters covering different frequency bands. The filters may be applied in any computational manner desired in either the time domain or the frequency domain. In the preferred embodiment, the filters are applied in the frequency domain. First, however, a power spectrum of the pre-emphasized sound signal samples in the analysis frames must be computed (320 of FIG. 3). The power spectrum is found by:

a. The pre-emphasized sound signal samples in the analysis frame are multiplied by samples of a window function, or weighting function. Any window function may be

applied. For purposes of explaining the present invention, a simple rectangular window is assumed (the window has a value of 1.0 for all samples).

b. The Fourier Transform of the pre-emphasized sound signal samples in each windowed analysis frame is computed.

c. Values for the power spectrum are obtained by squaring the Fourier Transform values."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the combination Chang et al. and Thorner et al. apparatus to the use the processing method taught by Fineberg because as stated above Thorner et al. indirectly suggested it and Fineberg gave the motivation needed for using his processor for example he stated in column 1, line 13-15 "to sound recognition in a high or variable noise environment" .

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Bell whose telephone number is (703) 306-3019.

If attempts to reach the examiner by telephone are unsuccessful the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377 can help with any inquiry of a general nature or relating to the status of this application.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or Faxed to: (703) 872-9306

Paul Bell
Paul Bell
Art unit 2675
December 7, 2004

Chanh Nguyen
CHANH NGUYEN
PRIMARY EXAMINER